

TXU Electric Comanche Peak Steam Electric Station P.O. Box 1002 Glen Rose, TX 76043 Tel: 254 897 8920 Fax: 254 897 6652 Iterry1@txu.com **C. Lance Terry**Senior Vice President & Principal Nuclear Officer

Ref: 10 CFR 50.55(a)(3)

CPSES-20010225 Log # TXX-01163 File # 10010

September 28, 2001

U. S. Nuclear Regulatory Commission ATTN: Document Control Desk Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)

DOCKET NO. 50-446

UNIT 2 INSERVICE INSPECTION (ISI) A-4 THROUGH A-6 RELIEF REQUEST FROM 1986 EDITION OF ASME CODE, SECTION XI,

NO ADDENDA

Gentlemen:

Via this letter TXU Electric requests NRC approval of 3 relief requests from the ASME Code requirements for the reactor pressure vessel (RPV) examinations for use at Comanche Peak Steam Electric Station Unit 2.

On September 22,1999, the Nuclear Regulatory Commission issued an amendment to 10 CFR 50.55a to incorporate by reference more recent editions and addenda of the ASME Boiler and Pressure Vessel Code and the ASME Code for Operation and Maintenance of Nuclear Power Plants for construction, inservice inspection, and inservice testing. These provisions provide updated rules for the construction of components of light-water-cooled nuclear power plants, and for the inservice inspection and inservice testing of those components. This final rule permits the use of improved methods for construction, inservice inspection, and inservice testing of nuclear power plant components.

Potr



TXX-01163 Page 2 of 2

Relief Request No. A-4 through A-6 seek relief from specific requirements of Subsection IWB in accordance with 10 CFR 50.55a (a)(3). The specific reasons are provided in each individual request. It is noted that the NRC has approved similar relief requests for other plants.

These relief requests are needed to support the Unit 2 sixth refueling outage (2RF06), which is scheduled to begin in March of 2002. To support planning activities for the reactor pressure vessel examinations that will be performed during 2RF06, your approval by February 1, 2002 would be greatly appreciated.

This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2. If you have any questions or need additional information regarding this matter, please feel free to contact Obaid Bhatty at (254) 897-5839 or Douglas W. Snow at (254) 897-8448.

Sincerely,

C. L. Terry

By:

D. R. Woodlan

Docket Licensing Manager

OAB/dws

Enclosures

c - E. W. Merschoff, Region IV
J. A. Clark, Region IV
D. H. Jaffe, NRR
Resident Inspectors, CPSES

G. Bynog, TDLR

I. System/Component for Which Relief is Requested:

Four Class I Reactor Pressure Vessel (RPV) Nozzle-to-Vessel welds Examined at Comanche Peak Steam Electric Station Unit 2.

RPV Nozzle-to-Vessel Weld (Weld TCX—1-1100A-19)

RPV Nozzle-to-Vessel Weld (Weld TCX—1-1100A-22)

RPV Nozzle-to-Vessel Weld (Weld TCX—1-1100A-23)

RPV Nozzle-to-Vessel Weld (Weld TCX—1-1100A-26)

II. Code Requirement:

ASME Section XI Class 1, ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1986 Edition with no Addenda; Table IWB-2500-1, Examination Category B-D, Full Penetration Welds of Nozzles in Vessels, Code Item B3.90, Figures IWB-2500-7 (a), (b) and (c).

III. Code Requirement from Which Relief is Requested:

Pursuant to 10 CFR 50.55a(a)(3)(i), TXU Electric requests to implement an alternative to the Volumetric (Ultrasonic (UT)) requirements of ASME Section XI Table IWB-2500-1. The Code invokes the (t/2) examination volume requirements of Figures IWB-2500-7 (a), (b) and (c). In lieu of the requirements of ASME Section XI, Figures IWB-2500-7 (a), (b), and (c), TXU Electric proposes to reduce the examination volume next to the widest part of the weld from half of the vessel wall thickness to one-half (½) inch from the weld; as indicated in Code Case N-613.

This relief is requested for the Comanche Peak Steam Electric Station Unit 2, first 10-year interval vessel examination.

IV. Basis for Relief:

Comanche Peak Unit 2 is currently required to perform inservice examinations of selected welds in accordance with the requirements of 10 CFR 50.55a, and the 1986 Edition with no Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components. The Code invokes the (t/2) examination volume requirements of Figures IWB-2500-7 (a), (b) and (c).

The examination volume for the RPV pressure retaining nozzle-to-vessel welds extend far beyond the weld into the base metal, and is unnecessarily large. This extends the

examination time significantly, and results in no net increase in safety, as the area being examined is a base metal region which is not prone to inservice cracking and has been extensively examined during construction, pre-service examination, and during the first inservice examinations with acceptable results.

The Code Case N-613 reduces the examination area to one-half (½) inch from the weld. TXU Electric intends to use the Code Case N-613 only for the outlet side of the RPV nozzle as shown in Figure 1 of the Code Case N-613. The implementation of this request for relief would reduce the examination volume next to the widest part of the weld from half of the vessel wall thickness to one-half (½) inch from the weld. This reduction is applicable to base metal examination volume (as indicated in Figure 1 only), and is not located in the high stressed areas of the nozzle-to-vessel weld. TXU Electric does not intend to apply the subject Code Case to the inlets of the vessel.

In summary, TXU Electric will conduct the ultrasonic examination of the outlet nozzles in the shell or head as shown using techniques designed for detection and sizing of surface and subsurface flaws within the examination volume (A-B-C-D-E-F-G-H), as indicated in Figure 1 of the Code Case N-613 (see page 5 of 7).

V. <u>Alternate Examinations:</u>

TXU Electric proposes to use the reduced volume of one-half (½) inch from the weld, in lieu of the requirements of ASME Section XI Figures IWB-2500-7(a).

The extent of examination coverage proposed, along with the periodic system pressure tests, will provide added assurance that the Reactor Vessel welds have remained free of service related flaws, therefore providing an acceptable level of quality and safety.

VI. Justification for the Granting of Relief:

The subject welds will be examined as indicated in Figure 1 of the Code Case N-613. There is no anticipated impact upon the overall plant quality and safety, and the granting of relief should not jeopardize the health and safety of the public.

Recently, the NRC granted similar relief to Salem Generating Station, Unit 1, Florida Power and Light St. Lucie Plant, Unit 2 (Reference 1 and 2).

VII. Implementation Schedule:

This relief is requested for the Comanche Peak Steam Electric Station Unit 2, third period of the first 10-year interval vessel examination.

VIII. REFERENCES

- Letter from J. Clifford (NRC) to H. W. Keiser (PSEG Nuclear) dated April 26, 2001; Subject; Salem Nuclear Generating Station, Unit No. 1 - Relief from ASME Code Requirements Related to the Inservice Inspection Program, Second 10-Year Interval, Relief Request RR-B8 (TAC No. MB1228)
- 2) Letter from Sheri R. Peterson (NRC) to T. F. Plunkett (FP&L) dated October 4, 1999; Subject; Relief from ASME Code Requirements Related to the Inservice Inspection Program, Second 10-Year Interval for St. Lucie Plant Unit 2 (TAC No. MA5311)

CASE

N-613 *

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: July 30, 1998

See Numeric Index for expiration and any reaffirmation dates.

Case N-613

Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Vessel-To-Nozzle Welds, Fig. IWB-2500-7(a), (b), and (c) Section XI, Division 1

Inquiry: What alternatives to the examination requirements of Section XI, Appendix I and Section V, Article 4 are permissible when performing ultrasonic examination of reactor vessel-to-nozzle welds?

Reply: It is the opinion of the Committee that ultrasonic examination of Category B-D nozzles may be conducted using techniques designed for detection and sizing of surface and subsurface flaws within the examination volume (A-B-C-D/E-F-G-H)/ oriented in a plane pormal to the vessel inside surface and parallel to the weld for Figs. 1 and 2, and oriented in a plane normal to the nozzle inside surface and parallel to the weld for Fig. 3.

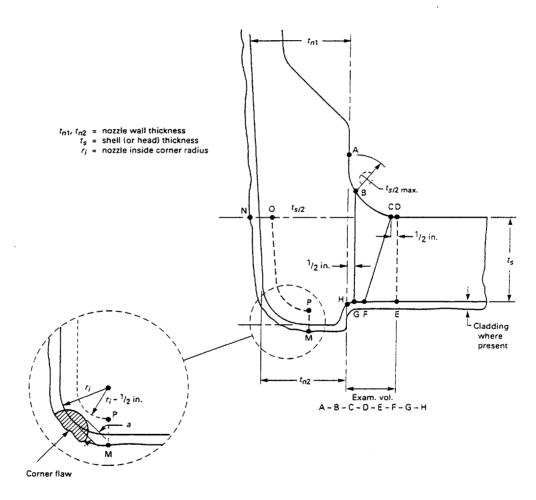
- Fox FIG 1.

* AS APPLIED AT CPSES UNITZ.

CASE (continued)

N-613

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



EXAMINATION REGION (Note (1))

Shell (or head) adjoining region Attachment weld region Nozzle cylinder region Nozzle inside corner region

EXAMINATION VOLUME (Note (2))

C-D-E-F B-C-F-G A-B-G-H M-N-O-P

NOTES:

- (1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
- (2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 1 NOZZLE IN SHELL OR HEAD (Examination Zones in Barrel Type Nozzles Joined by Full Penetration Corner Welds)

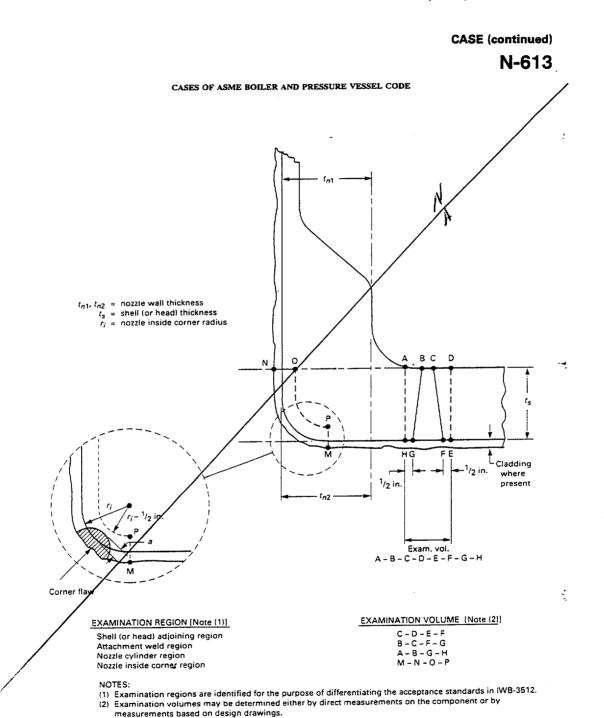
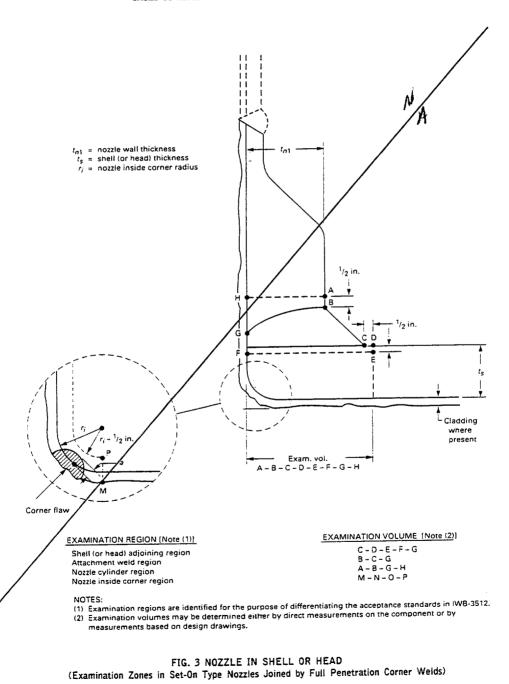


FIG. 2 NOZZLE IN SHELL OR HEAD (Examination Zones in Flange Type Nozzles Joined by Full Penetration Butt Welds)

CASE (continued)

N-613

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



I. System/Component for Which Relief is Requested:

Eight Class I Reactor Pressure Vessel (RPV) Nozzle-to-Shell welds. ASME Section XI, Class 1, Examination Category B-D, Item No. B3.100 Nozzle Inside Radius Section in Reactor Pressure Vessels (RPV) welds Examined at Comanche Peak Steam Electric Station Unit 2.

a) RPV Outlet Nozzle-to-Shell Welds

RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-19) RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-22) RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-23)

RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-26)

b) RPV Inlet Nozzle-to Shell Welds

RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-20)

RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-21)

RPV Nozzle-to-Shell Weld (Weld TCX—1-1100A-24)

RPV Nozzle-to-Shell Weld (Weld TCX-1-1100A-25)

II. Code Requirement:

ASME Section XI Class 1, ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1986 Edition with no Addenda; Table IWB-2500-1, Examination Category B-D, Full Penetration Welds of Nozzles in Vessels, Code Item B3.100, Figures IWB-2500-7 (a) through (d).

III. Code Requirement from Which Relief is Requested:

Pursuant to 10 CFR 50.55a(a)(3)(i), TXU Electric requests to implement an alternative to the Volumetric (Ultrasonic (UT)) requirements of ASME Code Section XI Table IWB-2500-1, Examination Category B-D, Item B3.100. TXU Electric proposes to perform a VT-1, Visual Examination, as Specified in the Code Case N-648 "Alternative Requirements for the Inner Radius Examinations of Class 1 Reactor Vessel Nozzles, Section XI, Division 1."

This relief is requested for the Comanche Peak Steam Electric Station Unit 2, first 10-year interval vessel examination.

IV. Basis for Relief:

Comanche Peak Unit 2 is currently required to perform inservice examinations of selected welds in accordance with the requirements of 10 CFR 50.55a, and the 1986 Edition with no Addenda of the ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components. According to a NRC memorandum (Reference 1), the NRC staff indicated that an ultrasonic examination could be replaced by VT-1 visual examination for the proposed RPV nozzle inspections on the basis surveillance is maintained and VT-1 visual examination is performed.

The implementation of this relief is also expected to reduce vessel examination time by approximately 20 hours, which translates to significant reduced personnel radiation exposure and cost savings.

V. Alternate Examinations:

In lieu of the volumetric examination requirements of ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item No. B3.100, a VT-1 visual examination will be performed as specified in Code Case N-648¹.

VI. <u>Justification for the Granting of Relief:</u>

In a NRC memorandum (Reference 1), the NRC staff indicated that an ultrasonic examination could be replaced by VT-1 visual examination for the proposed RPV nozzle inspections on the basis surveillance is maintained and VT-1 visual examination is performed. The proposed alternative examination (as specified in Code Case N-648) will not have an impact upon the overall plant quality and safety, and the granting of relief should not jeopardize the health and safety of the public.

VII. Implementation Schedule:

This relief is requested for the Comanche Peak Steam Electric Station Unit 2, third period of the first 10-year interval vessel examination.

VIII Reference:

1) NRC Internal memorandum from K.R. Wichman (NRC) to W.H. Bateman (NRC) dated May 25, 2000; Subject The Third Meeting with the Industry to discuss the elimination of RPV Inner Radius Inspection (ML003718630)

¹ Code Case N-648 contains a typographical error. Paragraph IWB-3513-3 is incorrectly referenced for the nozzle acceptance criteria. The correct reference is IWB-3512-1.

CASE

N-648

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Data: December 8, 2000
See Numeric Index for expiration
and any reaffirmation dates.

Case N-648
Alternative Requirements for Inner Radius
Examinations of Class 1 Reactor Vessel Nozzles
Section XI, Division 1

Inquiry: What alternative to the inservice examination requirements of Table IWB-2500-1, Examination Category B-D may be used for reactor vessels?

Reply: It is the opinion of the Committee that a VT-1 examination of the surface M-N shown in Figs.

IWB-2500-7(a) through (d) in the 1998 Edition may be performed in lieu of the volumetric examination required by Table IWB-2500-1, Examination Category B-D, Item No. B3.20 or Item No. B3.100, for inservice examination of reactor vessel nozzles other than BWR feedwater nozzles and operational control rod drive return line nozzles.

Crack-like surface flaws exceeding the acceptance criteria of Table IWB-3513-3 in the 1998 Edition are unacceptable for continued service unless the reactor vessel meets the requirements of IWB-3142.2, IWB-3142.3, or IWB-3142.4.

ż

TXU ELECTRIC COMANCHE PEAK STEAM ELECTRIC STATION –UNIT 2 FIRST TEN-YEAR INTERVAL ISI RELIEF REQUEST NO. A-6

I. System/Component for Which Relief is Requested:

Comanche Peak Steam Electric Station Unit 2, Class 1, Sixteen Category B-J Pressure Retaining Piping welds attaching the Reactor Pressure Vessel (RPV) Nozzle to safe end and safe end elbow [here after referred to as the subject welds].

Weld Numbers:

TCX-1-4100-1	TCX-1-4300-1
TCX-1-4100-2	TCX-1-4300-2
TCX-1-4100-13	TCX-1-4300-13
TCX-1-4100-14	TCX-1-4300-14
TCX-1-4200-1	TCX-1-4400-1
TCX-1-4200-2	TCX-1-4400-2
TCX-1-4200-13	TCX-1-4400-13
TCX-1-4200-14	TCX-1-4400-14

II. Code Requirement:

The 1999 Edition of 10 CFR 50.55(a) Codes and Standards was revised by Federal Register Notice 64 FR 51400, September 22,1999. This revision requires that ASME Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1995 Edition with 1996 Addendal Appendix VIII, Supplement 2 and 3 for austenitic piping welds be implemented by May 22, 2000.

III. Code Requirement from Which Relief is Requested:

Pursuant to 10 CFR 50.55a (a)(3)(ii), TXU Electric requests relief from ASME Section XI, Appendix VIII Supplement 2 and 3 for piping welds. TXU Electric is requesting approval to use alternative requirements by performing ultrasonic (UT) examination of the subject welds from the inside surface in accordance with the 1989 Edition, no addenda, of the ASME Code, Section XI, Paragraph IWA-2232 and Appendix III. This relief request would be for the Comanche Peak Steam Electric Station (CPSES) Unit 2 first 10-year interval reactor pressure vessel examination scheduled for the spring of 2002.

IV. Basis for Relief:

The subject welds are located inside the primary shield and reactor cavity.

There are currently no Appendix VIII qualified personnel or procedures for performing piping welds from the inside surface. In lieu of doing the Appendix VIII, Supplements 2, and 3 UT examinations from the pipe OD, TXU Electric requests relief to continue the past practice of performing the UT examination from the inside diameter (ID) using the 1986 Edition of the ASME Code, Section XI, Paragraph IWA-2232(b), and Appendix III.

This will be done in conjunction with our 10-year vessel examination, utilizing current industry technology. This will reduce the examination limitations by employing the UT from the ID. The ID examination would reduce the radiation dose and be a cost savings by eliminating the need for the removal of the sand plugs.

To perform the UT examination from the outside surface personnel performing the manual examinations (and supports such as builders of scaffolding, removal of insulation, preparing and cleaning the welds, fire watch, health physics among others) maybe exposed to a dose rate of 2500 to 8000 mRem/Hr.

The estimated number of hours required of these examinations, are as follows:

- Build scaffolding: 84 hours,
- Remove insulation: 32 hours,
- Weld preparation: 48 hours,
- Nondestructive examinations for 24 welds: 96 hours,
- _ Reinstall insulation: 32 hours and
- Remove scaffolding: 32 hours.

The total man-hours are 304. Using an effective dose rate of 0.25 R/Hr for work directly on the welds and 0.040 R/Hr for work away from the welds, the estimated dose is 27 Person-Rem.

TXU Electric's vendor would be required to perform an additional qualification exercise if they have to implement Appendix VIII examinations on the subject welds during the upcoming refueling outage. It is estimated that the total cost to our inspection vendor could exceed \$150,000.

V. Alternate Examinations:

Perform RPV ultrasonic examination of the subject welds from the inside surface in accordance with the 1986 Edition, no Addenda of the ASME Boiler and Pressure Vessel Code Section XI, Paragraph IWA-2232(b), and Appendix III.

VI. Justification for the Granting of Relief:

In 1991, licensees created the Performance Demonstration Initiative (PDI) to implement the performance demonstration requirements of Appendix VIII to Section XI of the Code for UT examination systems. PDI began qualifying personnel and procedures to Appendix VIII, Supplements 2 and 3 in 1994. These qualifications were applicable for UT examinations conducted from the outside surface of the pipe-to-pipe weld. By the time the proposed rule was published for comment in the Federal Register (62 FR 63892) on December 3, 1997, the staff and PDI believed that a sufficient number of UT personnel were qualified to Supplement 2 requirements to satisfy the licensees' needs. The staff established the accelerated implementation schedule for Supplement 2 based on this availability of qualified personnel. The final rule was published in the Federal Register (64 FR 51370) on September 22, 1999, which has since been reflected in the regulations.

Shortly after publishing the final rule, PDI realized that their program could not support Supplement 2 performance demonstrations conducted from the inside surface. For example, the existing test specimens were designed for performance demonstrations performed on the outside surface; the specimens contained flaws which were visible from the inside surface; and, the specimens did not model geometric limitations or scanning conditions which would been encountered during inside surface examinations. To support performance demonstrations conducted from the inside pipe surface, PDI has had to: design, fabricate, and acquire new test specimens; develop the appropriate protocol and test implementation procedures; "fingerprint" the specimens; develop inspection procedures; and train personnel.

PDI has submitted a proposed Code change to Supplement 2 that provides criteria for examinations that are to be performed from the inside diameter of piping. PDI projected that they will be able to support performance demonstrations from the pipe inside surface by November 22, 2002.

TXU Electric has determined that Supplement 2 examinations performed on the outside surface of the safe-end-to-pipe welds would not satisfy Code coverage requirements. Examinations from the outside surface would also require that the sand plugs be removed from the floor of the refueling cavity, and would result in additional costs and occupational radiation dose to plant workers as opposed to performing the examinations from the inside surface (see discussion in section V, Basis for Relief, above).

In addition, in order to satisfy the required accelerated implementation of Supplement 2 for inspection from the inside surface, TXU Electric would be required to fabricate additional qualification specimens that are not currently available, which would result in a significant burden in order to perform the necessary qualifications to implement Appendix VIII examinations on subject welds during this outage. TXU Electric proposes to perform RPV UT examination of the safe-end to pipe welds from the inside surface in accordance with the 1986 Edition, of the ASME Code, Section XI, Paragraph IWA-2232(b), and Appendix III. Appendix III requires a minimum UT examination volume of the inner 1/3 of the weld area (1/3t), and will provide reasonable assurance of the structural integrity of these welds. Thus an acceptable level of quality and safety will have been achieved and allowing the proposed alternative examination in lieu of the Code requirement will not endanger public health and safety.

TXU believes that requiring CPSES Unit 2 to conduct UT examination from the outside surface of the pipe in accordance with the qualification requirements of Supplement 2 would result in a hardship without a compensating increase in the level of safety.

The NRC has granted similar relief to Salem Generating Station, Unit 1 (Reference 1).

VII. Implementation Schedule:

This relief is requested for the Comanche Peak Steam Electric Station Unit 2, third period of the first 10-year interval vessel examination.

VIII. Reference:

 Letter from J. Clifford (NRC) to H. W. Keiser (PSEG Nuclear) dated April 26, 2001; Subject: Salem Nuclear Generating Station, Unit No.1-Relief from ASME Code Requirements Related to the Inservice Inspection Program, Second 10-Year Interval, Relief Request RR-B12 (TAC No. MB1236)